BFZ - cruise report

BFZ OFR OUTLINE: 9/22/95

Brief Intro:
- --Describe how the data is organized into the sections of the report (table of contents?), and that navigation tapes and other data are on file at the USGS.
- --Purpose of cruise: principal objectives (Randy). Include regional tectonic setting map (one we already have).
- --List of participants.
- --Either here or at end or as acknowledgement section: commendation for navy. Funding/support.

Navigation and Sea Beam:
- --Description of navigation system: difficulties and expected errors. (Look at LB's cruise notes for help).
- --Discussion of markers deployed (and table of markers with locations?)
- --Statement about Sea Beam including when NOAA acquired it and what we added to it on our cruise. (Help from Bob Dz.)
- --For SB lines we ran, include a trackline chart (without SB). If we don't have one, get it from Bob Dz.
- --Include strip of SB that Bob Dz took with him?
- --Discussion of offset between old and new Sea Beam (Loran-C vs. GPS); why the shift between them wasn't consistent from site to site, why it diminished to the west. (Bob Dz.)

Dive Summaries:
A 1-2 page (hopefully) summary for each dive, including:
- --Dive #:
- --Area:
- --Dive plan: (include purpose).
- --Time: (In water at xx:xx. On bottom from xx:xx to xx:xx and from xx:xx to xx:xx, etc. On deck at xx:xx).
- --Samples collected: xx rocks, x cores. (Possibly with their ID #'s).
- (--Number of photos collected? Or could include with Samples collected).
- --Dive summary. Skeletal chronology. Like Jane's A87 but with the above items pulled out. Include down time (but don't dwell too much on why). Look at video while writing summary (and use this time to clean up merged transcripts). Assignments: A87-Jane; A88, A89 and T784-Stephanie; A90, A92 and T783-Randy). See Jane's list of what to look for (errors in noting work package/transit mode, etc.)
- --Dive trackline on top of Sea Beam.

Samples:
- --Igneous rocks in table. (Jane's format: Sx# lat lon
  Descriptiondescription
  Descriptiondescription
  Sx# lat lon
  Descriptiondescription
  Descriptiondescription).
  Include igneous rock samples from cores. Descriptions from Alice'.
- --Hydrothermal rocks in table with same format as igneous.
  include 4C and 15C since they're not really cores.
  Descriptive, as opposed to bulk chemistry. (Randy).
- --Cores: Jane's diagrams (modified by X-ray images) on left side of page, description on right side. Use gross descriptions made in lab, possibly augment with highlights of XRD analysis. Save XRD table for chemistry OFR.

--Smear slide table: Jim's with modifications from Gretchen's.
--Table of foram work from Carol.

Observations:
--Merged transcript with short intro discussing the symbols used and where the different oservations were made (van, lab, etc.).

Cruise Summary:
--Successful cruise
--Implications of Blanco Ridge (tectonics) and East Blanco Depression (hydrothermal activity).
--Implications for future work.

notes:
1. when making tables, etc., use Times font, size 12.
2. ask Carol what the status of the CTD data is.

AGENDA--BLANCO MEETING 6/7/95

Summary of events

Work in Progress

•Open File--cruise report describing work at Blanco Ridge and E. Blanco Depression

•Geology paper--Blanco Ridge

•Core studies
- -XRD mineralogy, heavy minerals
- -bulk chemistry

•Hydrothermal mound samples (rock)
- -XRD mineralogy
- -petrography
- -bulk chemistry

•Petrology
- -petrography
- -bulk chemistry

•Paleontology

Work to be done

•Photogeology
- -Video logs and interpretation
- -still photos

•Organics

Future

Deadlines: September 1?

BLANCO FRACTURE ZONE OPEN-FILE REPORT OUTLINE FOR 6/7/95 BFZ MEETING

A. Introduction: **Stephanie**
list of participants, how data is organized in the report, where navigation tapes and other data are on file (USGS). Include acknowledgement with commendation for the Navy.

B. Cruise chronology (day by day, dive by dive description): **Stephanie & Jane**
Each dive: area, purpose, time, # of samples and photos, down time, etc.

C. Sea Beam and navigation:
Sea Beam from NOAA (contact: **Stephanie**)
Navigation tracklines with sample locations on bathy, possibly geology on bathy: **Jane** and **Stephanie**

D. Photographic observations (merged and edited transcript of three data sets -- lab video log, van video log, still photo log): **Jane** and **Stephanie**

E. Rock samples:
Non-hydrothermal: **Alice** and **Brad**
rock type descriptions and site by site table based on table by **Jane**
Hydrothermal rock samples: **Randy** and **Jane**
descriptions in table form, petrography, XRD mineralogy, and bulk chemistry
Alteration: **BRad, Alice, and Randy**

F. Cores:
Core descriptions by **Jim**, table by **Jane**
XRD data: **Jim**
Smear Slides: **Gretchen**
Chemistry and mineralogy of core subsamples: **Se Won**
Forams: **Carol** and **Keith Rice** and ?
Nannos: processing: **Carol**, identification: ?? (not Paula)
Organics: **KK**?
Radiographs: either wet process by Randy or dry (digital camera) with enhancement by **Stephanie** (and help from **John Barber**)

G. Summary of results: **Stephanie, Randy, Jane**

June 7, 1995--Blanco Group Meeting (Ross, Reid, Reiss, Hein, Chang, Davis, Rice, Koski) to discuss progress on cruise report and preliminary analytical results

•Stephanie has SeaBeam maps from NOAA, except for the study area in E. Blanco Depression

•Navigation--we have three sets of data (this is a problem area)
- -WHOI output data for ships navigation
- -HPL format data from the Navy (FROGNAV), 40 m offset from ship's nav
- -hard copy with locations plotted every 2 minutes
- -depths are also a problem as there is little agreement between values recorded by FROGNAV and values recorded in the ATV van

Tracklines and sample locations will be plotted on bathymetry.

Turtle locations may be determined from slant range, bearing, and depth

•Photographic logs have been merged (Jane)

•Rock samples--Alicé
- -59 samples collected, ~~submitted~~ were prepared for thin sections
- -Brad Carkin has completed petrography, will prepare summary table for cruise report and interpretive narrative
- -26 samples to A-labs; major element results have been received
- ~~-Glass chemistry done on A89 samples~~
- -300 pyroxene analyses completed on about 30 samples
- -3 samples with fresh glass analyzed by microprobe (3 separate sites, 90 analytical points (A82, A89, A90)

To do:
- -plagioclase, opaques, and olivine analyses by microprobe
- -alteration studies--veinlets, zeolites
- -more work on breccias--start with slabbing
- -Debbie Kelley is doing fluid inclusions
- -Comparison with other sites--chemistry is different from Juan de Fuca and Gorda rocks

Rock types include basalt, diabase, and gabbro. At the A88 site (the oblique ridge), the basalt has high Fe and Ti (a FeTi basalt).

Gabbro samples have unusual textures--rocks contain fine-grained and coarse-grained domains with similar compositions.

Gabbro samples from T784 have higher grade metamorphism (with blue-green amphiboles), exhibit brittle deformation fabrics, and have the most primitive compositions (highest Mg number) of samples analyzed. Alteration and metamorphism studies are ~~needed~~. in progress.

Siltstone from A89 site contains forams and rads.

Sr, Nd, and Pb isotopes are also needed. Sr only for glass samples, Nd + Pb would be useful also for altered samples

•Hydrothermal samples

Polished thin sections show that the "hard rock" hydrothermal samples (A92-4R2) are volcanic breccias cemented by hydrothermal minerals including barite, amorphous silica, smectite, and sulfides. The groundmass of the volcanic fragments are totally altered to clays, but some large plagioclase phenocrysts appear clear and unaltered. Euhedral barite crystals are up to a millimeter or more in length. Sulfides include pyrite, marcasite, and minor sphalerite which has a pale green color in transmitted light. Some sphalerite grains are decorated with tiny blebs of chalcopyrite.

Three samples have been sent to XRAL for their 40 element package + organic carbon.

•Sediment cores--Jim Hein, Se Won Chang

Examination of smear slides provide a basis for classification os sediment (see table provided by Jim)

-diatoms are abundant in most samples, rads also present
-sample A87-17c is a nannofossil ooze
-samples contain less than 1% heavy minerals, described by Gretchen
-some samples contain altered volcanic grains
-note presence of filamentous bacteria in cores A92-4c, A92-12c, and A9215c; could represent bacterial mats
-A92-6c contains volcanic fragments hydrothermally altered to smectite and quartz

Se Won has completed XRD analysis (see table). Results of carbon analyses also presented in a table. 20 samples are being submitted for analysis of 40-elements at XRAL.

Also need oxygen isotope data for smectite, Fe oxides, and amophous silica

•Paleontology--Carol Reiss

-tops and bottoms of 10 cores sampled
-planktic, benthic, and agglutinated forams present
-fewer forams in cores to the west
-Carol can identify to genus
-may be able to outline CCD boundary from calcareous fossil and carbonate data
-core A92-4c has unusual type of rad and foram--unique forms
-sample locations are plotted on bathy
-calcareous nannofossils--Paula can not do these, will call Dave Bukry (X4981), especially with regard to cores A87-17c and A87-18c (bag sample) where nannos are abundant. Also the bottoms of a few other cores.
-siliceous microfossils (rads and diatoms) to John Baron (X4971)

•CTD data are still being recovered (Jane).

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